

REMARKS

Applicants note the filing of an Information Disclosure Statement herein on July 19, 2004 and note that no copy of the PTO/SB/08A was returned with the outstanding Office Action. Applicants respectfully request that the information cited on the PTO/SB/08A be made of record herein.

The Final Office Action mailed August 11, 2004, has been received and reviewed. Claims 13, 14, 16 through 21, 23 through 31, and 69 through 80 are currently pending in the application. Claims 13, 14, 16 through 21, 23 through 31, 69 through 76, 78 and 79 stand rejected. Claim 77 has been objected to as being dependent upon rejected base claims, but the indication of allowable subject matter in such claim is noted with appreciation.

Applicants propose to amend claims 14, 17, 19, 24, 26, 71, and 78 through 80 and respectfully request reconsideration of the application as proposed to be amended herein. The proposed amendments are solely to enhance antecedent basis and do not surrender, or otherwise affect, the scope of the claims in their prior forms.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 6,197,168 to Matsunaga et al. in view of U.S. Patent No. 4,704,985 to Rubenstein and U.S. Patent No. 2,488,195 to Ivey

Claims 13, 23 through 26, 29 through 31, and 73 through 76 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,197,168 to Matsunaga et al. (hereinafter “Matsunaga”) in view of U.S. Patent No. 4,704,985 to Rubenstein (hereinafter “Rubinstein”) and U.S. Patent No. 2,488,195 to Ivey (hereinafter “Ivey”). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

The 35 U.S.C. § 103(a) obviousness rejections of claims 13, 23 through 26, 29 through 31, and 73 through 76 are improper because one of ordinary skill in the art would not be motivated to combine the references or, alternatively, the references, taken alone or in combination, fail to teach or suggest **all** the claim limitations.

Matsunaga discloses an electrochemical stain prevention apparatus including two electrically isolated electrodes each comprising a conductive film that is disposed on the interior of a pipe. (FIG. 3). A voltage of a magnitude capable of killing aquatic organisms is applied between the electrodes. More particularly, referring to FIG. 1, a power supply unit may be used to apply a positive potential is applied to the conductive film 2 formed on the submerged structure, and a negative potential to the conductive film 2 formed on the counter electrode substrate. Similarly, in reference to FIG. 3, a power supply unit may be used to apply a positive potential to conductive film 2a, and a negative potential to the conductive film 2b, wherein the conductive film 2a and conductive film 2b are electrically separated by a fixed gap 8.

Rubinstein discloses a spray gun mover including a lance extension having a coating apparatus (e.g., a spray gun) mounted on a distal end for insertion into a rotating drum or barrel along the axis of rotation. The lance extension is mounted on a movable lance frame by means of forward and rearward strut sets pivoted in pillow blocks at lower ends to a stationary support frame and at upper ends to the movable lance frame. The lance apparatus is actuated to extend the first coating apparatus into the rotating drum along its axis where the coating apparatus sprays the interior surface. The second coating apparatus is moved along and parallel to the rotating outer surface and is operable to spray it if desired.

Rubinstein discloses that there are no moving parts within the drum or barrel, nor near the spray or overspray area. Rubinstein states, "The only significant moving parts are the pivots which comprise easily replaceable and inexpensive pillow blocks disposed outside the actual coating station and away from any spray pattern or overspray area." Column 2, lines 27-31.

Thus, the invention of Rubinstein addresses problems associated with placement of moving parts within an overspray region, particularly within a closed area, such as a drum or barrel by physically separating the overspray region from the moving parts. *See FIG. 1; Col. 6, lines 14-20.*

Ivey discloses a paint spraying device including a spraying head for spraying paint and a suction passageway formed generally proximate thereto. Ivey describes that surplus paint sprayed against the surface is picked up under the influence of a vacuum, thereby making for better work and avoiding dripping. *Col. 1, lines 6-12.*

The Office Action states that it would have been obvious to one of ordinary skill in the art to modify the method of Matsunaga so as to spray the insulating material according to the method of Rubenstein. The Office Action indicates that one of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully coating the interior surface of the hollow article with the conductive material utilizing an apparatus with a long life, little wear, and few moving parts.

The Office Action proposes that one of ordinary skill in the art would be motivated to combine the teachings of Ivey with Matsunaga so as to: 1) reduce waste; and 2) collect overspray. *Page 6.*

With respect to reducing waste, Ivey teaches a container 32 may be interdisposed in the vacuum tube 24 and serves as a paint trap to collect paint which is sucked into the tube 24. However, such a trap may simply prevent paint from reaching the vacuum source (not shown). Further, Ivey does not teach or suggest reuse of the paint so collected, nor would such likely be desirable because it would appear likely that substantial amounts of solid or semi-solid particle would be captured within the paint, thus posing difficulty in re-spraying.

Moreover, the collection of liquid paint differs from the collection that the Office Action proposes, namely collection and reuse of the nitrided metal particulate as taught by Matsunaga. Applicants respectfully assert that it does not appear that Ivey teaches or suggests reuse of a particulate. For completeness, Matsunaga does not appear to teach or suggest that previously-nitrided, metal particulate may be reconstituted (successfully) into a spray metal wire 36a or 36b (*FIG. 29*) for achieving a reduction of waste.

Accordingly, the proposed motivation of reduced waste does not appear to be taught or suggested by the references. Thus, Applicants respectfully assert that one of ordinary skill in the art would not combine the teachings of Ivey and Matsunaga for the purpose of reducing waste.

With regard to collecting overspray, Applicants respectfully submit that one of ordinary skill in the art would not be motivated to combine the teachings of Ivey with the teachings of Rubinstein.

More specifically, each teach mutually independent approaches for addressing overspray. Namely, Rubinstein physically separates the spray apparatus from the moving parts of the lance. The invention of Rubinstein was purportedly successful for addressing issues related to overspray in proximity to moving parts. Similarly, the invention of Ivey was purportedly successful for collecting overspray.

Thus, one of ordinary skill in the art would not be motivated to combine the teachings of Ivey with the teachings of Rubinstein because to do so would render one of the inventions of Rubinstein or Ivey superfluous. That is, if the invention of Ivey eliminated overspray, there would be no need for employing the invention of Rubinstein. Similarly, if the invention of Rubinstein effectively prevented overspray from contacting moving parts, there would be no need for employing the invention of Ivey.

Furthermore, one of ordinary skill in the art would not be motivated to reduce overspray in the process taught by Matsunaga.

Particularly, Applicants respectfully assert that the teachings of Matsunaga teach away from collecting overspray because overspray is not a problem that is taught or suggested by Matsunaga, nor would be apparent to one of ordinary skill in the art. Rather, Applicants respectfully assert that the teachings of Matsunaga teach and suggest that collection of overspray would not be of concern.

Matsunaga teaches a relatively precise and thermally sensitive process for depositing the nitrided metal particulate on the interior of a pipe. Particularly, Matsunaga teaches that the molten metal particles 45 are carried by a high-speed stream of the cooled nitrogen-containing compressed gas in a supercooled state (i.e., in the molten state at a low temperature) when they are struck against the surface of the substrate 46, and piled on that surface to form a sprayed

coating film of the metal nitride. *See generally* Column 17, lines 52-67; Column 18, lines 1-17.

Thus, particles that do not strike against the surface of the substrate (at a high speed) would simply cool and become solid particulate.

Overspray of such a particulate would not form a “drip” as is explicitly addressed by Ivey. Further, such a solid metal particulate would not gum or foul moving parts as is explicitly taught by Rubinstein.

Accordingly, Applicants respectfully assert that one of ordinary skill in the art would not be motivated to combine either of the teachings of Ivey or Rubinstein therewith, let alone both of Ivey and Rubinstein.

Applicants respectfully assert that the only way one might find the present claims obvious is with impermissible hindsight from the disclosure of the present application. There must be some teaching, suggestion or motivation in the art, and not in Applicants’ disclosure, supporting the Examiner’s combination of documents. *See In re Fine*, 5 U.S.P.Q.2d 1596, 1599-1600 (Fed. Cir. 1988) (“One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention”); *Uniroyal v. Rudkin-Wiley*, 5 U.S.P.Q.2d 1434, 1438 (Fed. Cir. 1988) (something in prior art as a whole must suggest desirability of combination). Both the suggestion to make the claimed combination and a reasonable expectation of success must be founded in the prior art, not in applicants’ disclosure. *In re Vaeck*, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). That a prior art device could be modified to produce the claimed device does not justify an obviousness rejection unless the prior art suggested the modifications desirability. *In re Gordon*, 221 U.S.P.Q. 1125 (Fed. Cir. 1984).

Therefore, Applicant respectfully requests reconsideration and allowance of independent claim 13.

Each of dependent claims 23 through 26 is allowable as depending, either directly or indirectly, from independent claim 13, which is allowable.

Applicants respectfully request reconsideration and allowance of each of dependent claims 23 through 26.

Dependent claim 29 recites, *inter alia*, “flushing the interior of the pipe with cooling air.”

The Office Action states that “none of the cited references explicitly teach flushing the

interior of the pipe with cooling air.” Page 6.

Applicants respectfully remind the Examiner that the prior art reference (or references when combined) *must* teach or suggest *all* the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (Emphasis added); M.P.E.P. § 2143.03, stating “To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Furthermore, Applicants respectfully assert that one of ordinary skill in the art would not be motivated to flush the interior of the drum as taught by Rubinstein. Particularly, Applicants respectfully submit that flushing the interior of the drum would likely propel overspray from the interior of the drum substantially directly through aperture 57 formed in wall 56, as shown in FIGS. 1 and 2 of Rubinstein. Such a condition would directly interfere with the objectives of the Rubinstein invention.

Also, flushing the interior of a pipe with cooling air may interfere with nitriding of the metal particles as taught by Matsunaga.

Therefore, Applicants respectfully assert that one of ordinary skill in the art would not be motivated to flush the interior of a pipe with cooling air. Thus, Applicants respectfully assert that dependent claim 29 is allowable.

In addition, dependent claim 29 is allowable as depending from independent claim 13, which is allowable.

Therefore, Applicants respectfully request reconsideration and allowance of dependent claim 29.

Dependent claim 30 recites, *inter alia*, “directing the cooling air into the interior of the pipe from at least one cooling air outlet disposed on the extension arm.”

Applicants respectfully assert that none of the references teach or suggest all the claim limitations of dependent claim 30. The prior art reference (or references when combined) *must* teach or suggest *all* the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (Emphasis added); M.P.E.P. § 2143.03, stating “To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Therefore, Applicants respectfully assert that dependent claim 30 is allowable.

Also, dependent claim 30 is allowable as depending from independent claim 13, which is allowable.

Accordingly, Applicants respectfully request reconsideration and allowance of dependent claim 30.

Applicants respectfully assert that dependent claim 31 is allowable as depending from independent claim 13, which is allowable.

Therefore, Applicants respectfully request reconsideration and allowance of dependent claim 31.

Also, dependent claim 73 is allowable as depending from independent claim 13, which is allowable.

Therefore, Applicants respectfully request reconsideration and allowance of dependent claim 73.

Further, dependent claim 74 recites, *inter alia*, “measuring the position of the spray gun in relation to the interior surface of the pipe while spraying the conductive material.”

Applicants respectfully assert that none of the references teach or suggest all the claim limitations of dependent claim 74. The prior art reference (or references when combined) *must* teach or suggest *all* the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (Emphasis added); M.P.E.P. § 2143.03, stating “To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Therefore, Applicants respectfully assert that dependent claim 74 is allowable.

Also, dependent claim 74 is allowable as depending from independent claim 13, which is allowable.

Therefore, Applicants respectfully request reconsideration and allowance of dependent claim 74.

Dependent claim 75 recites, *inter alia*, “measuring the thickness of the conductive material while spraying the conductive material.”

Applicants respectfully assert that none of the references teach or suggest all the claim

limitations of dependent claim 75. The prior art reference (or references when combined) *must* teach or suggest *all* the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (Emphasis added); M.P.E.P. § 2143.03, stating “To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Therefore, Applicants respectfully assert that dependent claim 75 is allowable.

Also, dependent claim 75 is allowable as depending from independent claim 13, which is allowable.

Therefore, Applicants respectfully request reconsideration and allowance of dependent claim 75.

Dependent claim 76 recites, *inter alia*, “introducing atomized water into the interior of the pipe, the atomized water carried by the cooling air.”

Applicants respectfully assert that none of the references teach or suggest all the claim limitations of dependent claim 76. The prior art reference (or references when combined) *must* teach or suggest *all* the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (Emphasis added); M.P.E.P. § 2143.03, stating “To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Therefore, Applicants respectfully assert that dependent claim 74 is allowable.

In addition, Applicants respectfully assert that one of ordinary skill in the art would be motivated to introduce atomized water into the interior of the pipe in combination with the process for depositing supercooled metal particles as taught by Matsunaga because to do so would likely interfere with the carefully tailored supercooling by way of the nitrogen gas as taught by Matsunaga (i.e., may cool the particles so that they solidify prior to striking against the interior of the pipe).

Further, introducing water (i.e., hydrogen and oxygen) would likely interfere with the nitriding of the sprayed (molten) metal particles as taught by Matsunaga. Such an effect would directly contrast with the teachings of Matsunaga. Applicants respectfully assert that one of ordinary skill in the art would not be motivated to make such a combination.

As a further chemical consideration, one of ordinary skill in the art would not risk contact of molten titanium with water. Specifically, Matsunaga teaches thermal spraying of (molten) titanium. *See Examples 1-8; Col. 19, lines 60-67; Col. 20, lines 1-67; Col. 21, lines 1-56.*

Applicant directs the Examiner's attention to a quote from an article pertaining to melting titanium with a water-cooled furnace, JOM, 52 (5) (2000), pp. 13-17, stating "... when water contacts molten titanium, the water turns to steam. Titanium has such an affinity for oxygen that it breaks down the water, absorbs the oxygen, and liberates the hydrogen. Under these circumstances, both steam and hydrogen explosions are possible." Despite teaching that the titanium particles may be supercooled *when they are struck against the surface of the substrate* 46, Matsunaga teaches that the particles are molten. *See generally Column 17, lines 52-67; Column 18, lines 1-17.*

Therefore, Applicants respectfully assert that one of ordinary skill in the art, in consideration of the likely consequences of introducing atomized water into the interior of the pipe in combination with a thermal nitriding and spraying process as taught by Matsunaga, would decline to do so.

Moreover, dependent claim 76 is allowable as depending from independent claim 13, which is allowable.

Therefore, Applicants respectfully request reconsideration and allowance of dependent claim 76.

Obviousness Rejection Based on U.S. Patent No. 6,197,168 to Matsunaga et al. in view of U.S. Patent No. 4,704,985 to Rubenstein and U.S. Patent No. 2,488,195 to Ivey, as applied to claim 13 above, and further in view of U.S. Patent No. 5,024,423 to Matsumoto et al.

Claims 14, 16 through 19, 69 through 72, and 78 through 80 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,197,168 to Matsunaga et al. in view of U.S. Patent No. 4,704,985 to Rubenstein et al. and U.S. Patent No. 2,488,195 to Ivey, as applied to claim 13 above, and further in view of U.S. Patent No. 5,024,423 to Matsumoto et al. (hereinafter "Matsumoto"). Applicants respectfully traverse this rejection, as hereinafter set forth.

The Office Action indicates that “It would have been obvious to one of ordinary skill in the art to modify the method of Matsunaga in view of Matsumoto so as to spray the insulating material according to the method of Rubinstein.” Page 6, paragraph 13.

The teachings of Matsunaga, Rubinstein, and Ivey are discussed above.

Applicants respectfully submit that it would not be obvious to one of ordinary skill in the art to modify the method of Matsunaga in view of Matsumoto so as to spray the insulating material according to the methods of Rubinstein and Ivey.

Particularly, one of ordinary skill in the art would not be motivated to make the proposed combination because Matsunaga does not teach or suggest utilizing a high-temperature spray method for depositing insulative material. Rather, Applicants respectfully submit that it appears that the teachings of Matsunaga suggest low-temperature spraying methods for depositing insulative layers that are suitable for practicing the respective inventions thereof.

More specifically, Matsunaga teaches and suggests a **low-temperature** process for spraying the insulative material. While Matsunaga discloses that ceramics such as alumina, zirconia, titanium oxide, or silicon oxide may form coating it appears that Matsunaga discloses that these constituents are sprayed via a low temperature process.

Matsunaga states, at Column 16, line 61 – Column 17, line 13 that

“a resin layer 1f containing an inorganic powder having a particle diameter of from 10 to 200 μm is used. The inorganic powder contained in the resin layer 1f includes alumina, zirconia, silicon oxide and titanium oxide, and these can be used alone or in admixture of two or more. The inorganic powder is mixed within the range of from 10 to 300% by weight based on the solid content of the resin used. As the resin used in the resin layer 1f, a two component curable unsaturated polyester resin, an acrylic-urethane resin, a polyester-urethane resin, a silicone-urethane resin, a silicone-acrylic resin, an epoxy resin, a thermosetting melamine-alkyd resin, a melamine-acrylic resin, a melamine-epoxy resin, an acrylic resin, an acrylic-urethane resin and the like are mentioned. These can be used alone or in admixture of two or more. This resin layer 1f can be formed by coating the resin by a spraying method, a brush coating method, a roll coater method or the like, and then conducting air-drying or heat-drying.”

Therefore, Matsunaga expressly discloses a method of mixing a powdered ceramic insulative material with a resin, wherein the mixture is sprayed onto a substrate.

Thus, any of the above-referenced resins that Matsunaga teaches and suggests would not be suitable for the relatively high-temperature spraying process disclosed by Matsumoto. Particularly, the resin would burn. Such a process would likely foul the spray device taught by either of Matsunaga or Mastumoto. Thus, Applicants respectfully submit that Matsunaga teaches away from, or is incompatible with Matsumoto.

However, since this argument was not persuasive in the previous amendment, while Applicants maintain the argument, Applicants further assume, for the purposes of argument only, that the alumina as taught by Matsumoto is employed in a spraying process as taught by Matsunaga.

The Office Action indicates that by utilizing the same type of deposition process for both the conducting layer and the insulating layer, the overall process is greatly simplified. Office Action, Page 2.

Applicants direct the Examiner's attention to FIG. 29 of Matsunaga, which illustrates a spray gun 31 having two sets of feed rollers 38a, 38b for separately feeding spray metal wires 36a, 36b from the gun to a tip of a nozzle 37. When the spray metal wires 36a and 36b to which different polarities are imparted with the high-frequency direct current power supply 32 are contacted at a spray metal wire melting portion 39, an electrical arc is generated, and the spray metal wires 36a, 36b are melted with this electrical arc. Col. 17, lines 39-51.

Applicants respectfully assert that the spray gun taught by Matsunaga would not be capable of spraying an electrically insulating material, such as alumina, for at least two reasons. First, the bends within the spray gun 31 taught by Matsunaga would break brittle material, such as a ceramic material, and it would likely bind therein.

Second, an insulative material is, by definition, not electrically conductive. Therefore, the polarities imparted, as shown in FIG. 29 of Matsunaga, to an insulative material, such as alumina would be useless for creating an arc as taught by Matsunaga. Applicants respectfully assert that such a combination does not possess a reasonable expectation of success.

Therefore, the overall process would not be greatly simplified since the same plasma spray gun taught by Matsunaga for spraying a conductive material would not be amenable for spraying an insulative material.

Thus, at best, Matsumoto teaches a substantially different plasma spraying process for depositing an insulative material. Therefore, Applicant respectfully points out that Matsumoto teaches a high-temperature spraying technique is utilized to deposit an insulative layer onto the outer surface of a refractory (i.e., high-temperature) material. As such, it is likely that such a high temperature process may likely damage a non-refractory pipe onto which it was sprayed. Thus, Applicants respectfully assert that one of ordinary skill in the art would not utilize the teachings of Matsumoto in combination with the teachings of Matsunaga.

As a further note, the Office Action indicates that the Examiner "relies upon Matsumoto exclusively as teaching that the insulating oxide materials of Matsunaga can be deposited by plasma spraying." Office Action, page 3.

Applicants respectfully assert that portions of the references that do not support the motivation to combine cannot be dismissed by relying exclusively upon an isolated teaching or suggestion found within one or both of the references.

Rather, the patentability standard for a case of obviousness requires that a reference be considered as a whole. "Portions arguing against or teaching away from the claimed invention must be considered." Bausch & Lomb, Inc. v. BarnesHind/Hydrocurve, Inc., 230 USPQ 416 (Fed. Cir. 1986). A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 220 U.S.P.Q. 303 (Fed. Cir. 1983). *See also* M.P.E.P. § 2141.02.

Additionally, "it is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teaching of the prior art so that the claimed invention is rendered obvious One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." In re Fritch, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992).

Also, dependent claim 14 is allowable as depending from independent claim 13, which is allowable.

Accordingly, Applicants respectfully request reconsideration and allowance of dependent claim 14.

Each of dependent claims 16, 17, 18, 19, and 69 is allowable as depending from

independent claim 13, which is allowable.

Therefore, Applicants respectfully request reconsideration and allowance of each of dependent claims 16, 17, 18, 19, and 69.

Dependent claim 70 recites, *inter alia*, “measuring a position of the spray gun in relation to the interior surface of the pipe while spraying the insulative material.”

The Office Action states, with respect to claims 70-71 that “insofar as this combination of references involves the artisan’s coating the hollow article in a predetermined fashion and to a predetermined thickness, it is the examiner’s position that the limitations of these claims are met.” Page 8.

Applicants respectfully assert that the limitations of “coating the hollow article in a predetermined fashion and to a predetermined thickness” are not found in either of claims 70 or 71. As such, Applicants request clarification regarding the teaching or suggestion in the references that pertains to measuring a position of the spray gun in relation to the interior surface of the pipe while spraying the insulative material.

Additionally, Applicants find no teaching or suggestion within the references for measuring a position of the spray gun in relation to the interior surface of the pipe while spraying the insulative material. The prior art reference (or references when combined) *must* teach or suggest *all* the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (Emphasis added); M.P.E.P. § 2143.03, stating “To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Additionally, dependent claim 70 is allowable as depending from independent claim 13, which is allowable.

Therefore, Applicants respectfully request reconsideration and allowance of dependent claim 70.

Dependent claim 71 recites, *inter alia*, “controlling the position of the spray gun in relation to the interior surface of the pipe responsive to measuring the position.”

Applicants respectfully assert that none of the references teach or suggest controlling the position of the spray gun in relation to the interior surface of the pipe responsive to measuring the

position. The prior art reference (or references when combined) *must* teach or suggest *all* the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (Emphasis added); M.P.E.P. § 2143.03, stating “To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Furthermore, Applicants further assert that one of ordinary skill in the art would not pursue controlling the position of the spray gun responsive to measuring the position with respect to the apparatus taught and suggested by Rubinstein.

Foremost, the position of the spray gun relative to the interior of a hollow article would be determined according to the lengths, configuration, and particular position of the components of the moveable frame. See FIGS. 1 and 2. Thus, Rubinstein appears to teach away from controlling the position of the spray gun responsive to measuring the position, since the position of a spray gun mounted to a lance structure as taught by Rubinstein would have a predetermined position in relation to a surface of a pipe based upon the lengths, configuration, and particular position of the components of the moveable frame.

Applicants find no teaching or suggestion within the references for controlling a position of a spray gun responsive to measuring the position of the spray gun. The prior art reference (or references when combined) *must* teach or suggest *all* the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (Emphasis added); M.P.E.P. § 2143.03, stating “To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

In addition, dependent claim 70 is allowable as depending from independent claim 13, which is allowable.

Therefore, Applicants respectfully request reconsideration and allowance of dependent claim 70.

Dependent claim 72 recites, *inter alia*, “measuring the thickness of the insulative layer while spraying the insulative material.”

Applicants find no teaching or suggestion within the references for measuring the thickness of the insulative layer while spraying the insulative material. The prior art reference

(or references when combined) *must* teach or suggest *all* the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (Emphasis added); M.P.E.P. § 2143.03, stating “To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

In addition dependent claim 77 is allowable as depending from independent claim 13, which is allowable.

Therefore, Applicants respectfully request reconsideration and allowance of dependent claim 71.

Obviousness Rejection Based on U.S. Patent No. 6,197,168 to Matsunaga et al. in view of U.S. Patent No. 4,704,985 to Rubenstein, U.S. Patent No. 2,488,195 to Ivey and U.S. Patent No. 5,024,423 to Matsumoto et al., as applied to claim 19 above, and further in view of U.S. Patent No. 3,740,522 to Muehlberger

Claims 20 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsunaga et al. (U.S. Patent No. 6,197,168) in view of Rubenstein et al. (U.S. Patent No. 4,704,985), Ivey (U.S. Patent No. 2,488,195) and Matsumoto et al. (U.S. Patent No. 5,024,423), as applied to claim 19 above, and further in view of Muehlberger (U.S. Patent No. 3,740,522). Applicants respectfully traverse this rejection, as hereinafter set forth.

The teachings of Matsunaga, Rubinstein, Ivey, and Matsumoto have been discussed above.

Muehlberger also teaches a method of spray coating an interior of a pipe by way of an elongated torch fixedly mounted generally coaxially of the pipe. The torch may be any desired length, for example, 10 or 20 feet. In operation, the torch is started (by high-frequency starting means, or other means) and the apparatus 146 is operated to rotate the pipe 144 about its axis and to feed the pipe at a predetermined speed along its axis so as to coat the interior of the pipe. Thereafter, the pipe is removed from the apparatus 146 and reversed, so that the other half of the pipe may be coated. Pipe lengths up to forty feet or more may thus be interiorly spray-coated with corrosion-resistant or wear-resistant material. *See generally* Col. 13, lines 10-30; FIG. 12.

The Office Action states that “the examiner relies on Muehlberger exclusively as teaching

cooling of a plasma spray gun to prevent damage thereto." Office Action, page 3.

Applicants respectfully assert that portions of the references that do not support the motivation to combine cannot be dismissed by relying exclusively upon an isolated teaching or suggestion found within one of the references.

Rather, the patentability standard for a case of obviousness requires that a reference be considered as a whole. "Portions arguing against or teaching away from the claimed invention must be considered." Bausch & Lomb, Inc. v. BarnesHind/Hydrocurve, Inc., 230 USPQ 416 (Fed. Cir. 1986). A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 220 U.S.P.Q. 303 (Fed. Cir. 1983), *see also* M.P.E.P. § 2141.02.

Additionally, "it is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teaching of the prior art so that the claimed invention is rendered obvious One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." In re Fritch, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992).

Therefore, Applicants maintain the argument that the teachings of Muehlberger in combination with Rubinstein are inconsistent. Particularly, Muehlberger teaches that the spray gun is stationary while the pipe is moved longitudinally and rotated. In contrast, Rubinstein teaches an apparatus for moving a spray gun by way of a structure of lances. Thus, it appears that Muehlberger and Rubinstein teach contrasting methods and apparatus for spray coating an interior of a hollow article. Therefore, the invention of Rubinstein would be superfluous in combination with Muehlberger.

Further, the invention of Rubinstein addresses problems associated with moving parts within a hollow article to be coated, or at least within an overspray region. Applicants respectfully submit that Muehlberger does not teach or suggest such problems during use of the invention taught and suggested therein. Accordingly, one of ordinary skill in the art would not be motivated to combine Muehlberger with Rubinstein. Rather, it is respectfully submitted that consideration of Muehlberger in its entirety teaches away from any combination with Rubinstein, and vice-versa. In other words, both references fail to provide any motivation for the attempted

combination.

Further, dependent claim 20 is allowable as depending from independent claim 13, which is allowable.

Therefore, Applicants respectfully request reconsideration and allowance of dependent claim 20.

Dependent claim 21 recites, *inter alia*, “cooling the extension arm separately from the thermal spray gun.”

The Office Action states that “none of the cited references explicitly state separately cooling the extension arm.” Page 9. Applicants agree that none of the references cited in the rejection teach or suggest the limitation of dependent claim 21. The prior art reference (or references when combined) *must* teach or suggest *all* the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (Emphasis added); M.P.E.P. § 2143.03, stating “To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Since the references cited in the rejection fail, either alone or in combination, to teach or suggest the claim limitation recited in dependent claim 21, Applicants respectfully submit that claim 21 is allowable.

Also, dependent claim 21 is allowable as depending from independent claim 13, which is allowable.

Accordingly, Applicants respectfully request reconsideration and allowance of dependent claim 21.

Obviousness Rejection Based on U.S. Patent No. 6,197,168 to Matsunaga et al. in view of U.S. Patent No. 4,704,985 to Rubenstein and U.S. Patent No. 2,488,195 to Ivey, as applied to claim 19 above, and further in view of U.S. Patent No. 3,740,522 to Muehlberger

Claims 27 and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsunaga et al. (U.S. Patent No. 6,197,168) in view of Rubenstein et al. (U.S. Patent No. 4,704,985) and Ivey (U.S. Patent No. 2,488,195), as applied to claim 19 above, and further in view of Muehlberger (U.S. Patent No. 3,740,522). Applicants respectfully traverse this rejection,

as hereinafter set forth.

The teachings of Matsunaga, Ivey, Muehlberger, and Rubinstein are discussed above. The arguments presented hereinabove regarding their combination or modification for purposes of an obviousness rejection are maintained, but not repeated.

Dependent claim 26 is allowable as depending from independent claim 13, which is allowable.

Therefore, Applicants respectfully request reconsideration and allowance of dependent claim 26.

Dependent claim 27 recites, *inter alia*, “cooling the extension arm separately from the thermal spray gun.”

The Office Action states that “none of the cited references explicitly state separately cooling the extension arm.” Page 9. Applicants agree that none of the references cited in the rejection teach or suggest the limitation of dependent claim 27. The prior art reference (or references when combined) *must* teach or suggest *all* the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (Emphasis added); M.P.E.P. § 2143.03, stating “To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Since the references cited in the rejection fail, either alone or in combination, to teach or suggest the claim limitation recited in dependent claim 27, Applicants respectfully submit that claim 27 is allowable.

Also, dependent claim 27 is allowable as depending from independent claim 13, which is allowable.

Accordingly, Applicants respectfully request reconsideration and allowance of dependent claim 27.

Objections to Claim 77/Allowable Subject Matter

Claim 77 stands objected to as being dependent upon rejected base claims, but are indicated to contain allowable subject matter and would be allowable if placed in appropriate independent form. Applicant notes with appreciation the indication of allowable subject matter.

ENTRY OF AMENDMENTS

The proposed amendments to claims 14, 17, 19, 24, 26, 71, and 78 through 80 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application. Further, the amendments do not raise new issues or require a further search. Finally, if the Examiner determines that the application is not in condition for allowance, entry is respectfully requested upon filing of a Notice of Appeal herein.

CONCLUSION

Claims 13, 14, 16 through 21, 23 through 31, and 69 through 80 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



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